

ABSTRACT

Using arrays of optical fibers connected to specially configured electronics, e.g., a phototransistor, an LED, an amplifier, a detector, and display, software and PCMCIA  
5 A/D board available on a personal computer, continuous real-time acquisition, processing, and visualization of change in a monitored medium is provided. Many of the individual circuit elements above may be replaced with a power meter in an alternative embodiment. In a specific application, scour data are collected on the depth of sediment below a body of water. As the sediment is eroded by an event, the ends of the optical  
10 fibers in the array display a different reflection or transmission coefficient indicating that water has replaced sediment. By knowing which of the optical fiber ends in the array is indicating the changed reflection or transmission coefficient, an estimate of how much scour has occurred is provided. A method of employment of the system is also provided.